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Pilot the use of an electronic system to record and monitor the physical submission of student work.

- Author: Andy Ramsden
- Date: 10th May, 2010
- Version 1.3

Acknowledgements

A number of different teams have been involved in this project. These include;

Name	Team
Andy Ramsden	e-learning (LTEO)
James Barrett	e-learning (LTEO)
Matt Roper	External Software Developer
Lucie Pursell	Faculty of Engineering
Anne Madden	SAMIS (BUCS)
Martin Radford	SAMIS (BUCS)
Amy Cavanagh	SAMIS (Registry)

I'd also like to acknowledge the work undertaken by the numerous members of staff in the Faculty of Engineering & Design who have undertaken ongoing testing of the software and the hardware.

Part of the project was funded from the JISC LTIG QR Code Project (<http://blogs.bath.ac.uk/qrcode>). This included funding for the external developer, and the purchase of two USB scanners.

Executive Summary

This pilot project was introduced as an outcome of a Faculty Executive Assistants meeting chaired by Alison Price (Academic Registrar).

The project aimed to provide a simple mechanism whereby students could access SAMIS on the Web to print off a cover sheet for an identified piece of coursework to be submitted. The cover sheet was then stapled to the actual assignment and submitted either via a drop box at the Department Office or handed over in person. Administrative Staff would collect and scan the QR Code displayed on the printed coversheet. After scanning, an email confirmation is sent to the student and the appropriate table in SAMIS updated with a time/date stamp. A business object report could be run against the assignment to identify who has submitted, who hasn't and those for with extensions have been granted.

Overall, the pilot project can be viewed as a success. The feedback from Staff and Students has been very positive and it offers an efficiency gain over the current manual processing of assignments. For instance, log data implies administrative staff can process 10 submissions a minute, compared to one submission every few minutes

with the previous manual approach. The log evidence suggests a high use with very few support requirements. Between 25th March, 2010 and 4th May, 2010 a total of 814 assignments have been processed by the system.

This report recommends the roll out of the pilot as a service across the University of Bath. The service will be the responsibility of the e-Learning Team (primary contact point), with support from the SAMIS (BUCS) and Registry teams.

Background

The e-Learning Team (LTEO) currently develops and maintains the QR Code generation service for the University of Bath (<http://www.bath.ac.uk/barcodes>).

This pilot service builds on our team skills and experiences. For instance, the QR Code generator service is already integrated with the Moodle (VLE) Service to provide easier access to Moodle activities for those using a mobile phones.

Aims and Objectives

The broad aims of the pilot were;

- reduce the amount of time to administer the physical submission of assignments.
- ensure all students have a similar experience submitting assignments and receive a confirmation email.

The anticipated outcomes include;

- evidencing the efficiency gains from the application. Including the minimization of errors due to transcription and confusion.
- evidencing the student body have a positive experience from the innovation
- developing a service which is effective, achieves the broad goals and is able to scale (if so required).
- Ensure the service is stable, and identify who is responsible for maintaining the service.

Source: <http://blogs.bath.ac.uk/qrcode/projects/qr-code-in-recording-students-submissions-of-assignments/>

Methodology

The pilot phase was run from December 2009 to the end of May 2010. The project was managed by Andy Ramsden (Head of e-Learning).

The project used a very agile project management approach around a number of small, interlinked achievable targets to inform the evolving user requirements and technical developments in a number of small developmental stages. A requirement was the solution should not be determined by a specific technical scanner solution. Therefore, it has been designed to enable staff to scan submissions using mobile devices as well as static computer based scanners.

Implementation

Figure 1 illustrates the current workflow and responsibilities for individuals and the teams. Clearly, there are two specific services; the creation of the coversheet, and the scanning (recording and monitoring) of the coversheet into SAMIS.

	Dept Administrators		Students		Software owned by	Notes
Ensuring the data is accurate on SAMIS for the due assignments	☺	Need to liaise with the SAMIS teams			SAMIS	
Logs onto SAMIS on the web. Selects the assignment tab, clicks on the appropriate assignment cover sheet and prints			☺	Prints the coversheet	E-learning	Redirected from SAMIS on the web to the coversheet (php) page. The information is encrypted
Staples the coversheet to their submitted work and hands-in			☺			
Collect the assignments, open up the scanner software, and scan	☺	Need to use the unlock key for the scanner			E-learning	This will also involve the sending of the student confirmation email and data logging
Runs the business object report (and takes any required action), attaches to scripts for distribution	☺				SAMIS	

Evaluation

Staff and Student responses to the system have been very positive. The following extracts are from “Piloting the use of QR Codes to manage and record student assignments in the Faculty of Engineering”

<http://blogs.bath.ac.uk/qrcode/2010/03/15/piloting-the-use-of-qr-codes-to-manage-and-record-student-assignments-in-the-faculty-of-engineering/>

“all went extremely well today ... roll on the next one!”

“this is an improvement as it logs the time received and gives electronic data on the submission allowing for ease of analysis. Students seemed to like it and thought it was an improvement”.

The student feedback has also been positive, one commented, “*it was great not having to write the cover sheets!*”

The pilot service has been available since the end of March 2010. Between the 25th March 2010, and the 4th May 2010 a total of 814 assignments have been processed. This has generated very few queries or support requirements. Through an iterative development approach new functionality has been successfully rolled out as requested by end users.

Against the stated aims and objectives the anecdotal evidence suggests this must reduce the time to monitor and report on student submissions of assignments by Departmental Administrators. In addition, the procedure has standardised the experience for the student across the Faculty. They all access SAMIS on the Web to print the coversheet, they all attach the coversheet and submit. After which they all get an email confirming their work has been submitted (time and date stamped).

The student feedback to the Departmental administrators has been positive for the innovation. There appears to have been few issues which need addressing. There has been some reference to printing not being on one page.

From the perspective of the e-learning Team and the SAMIS (BUCS) Team, the solution is simple, elegant and scales up to an institutional service as it uses connects existing supported services / systems using simple and highly stable technologies.

Outputs & Results

- Documentation for the software / service (will be available from <http://blogs.bath.ac.uk/qrcode> - due date end of May 2010)
- Start up costs for a Department / Faculty (Appendix 1)
- A proposed service model for a University wide implementation (Appendix 2)
- Dissemination (to date)
 - Press Release: Piloting the use of QR Codes to manage and record student assignments in the Faculty of Engineering (<http://blogs.bath.ac.uk/qrcode/2010/03/15/piloting-the-use-of-qr-codes-to-manage-and-record-student-assignments-in-the-faculty-of-engineering/>)
 - QR Code on assignments submission: A work flow (<http://blogs.bath.ac.uk/qrcode/2010/02/28/qr-code-on-assignment-submissions-a-work-flow/>)
- Ongoing reflections (http://andyramsdens.wordpress.com/tag/qr_submission/)

Recommendations

1. Provide this as an institutional service. The first phase will take some additional resource from e-Learning, BUCS (SAMIS Team, and Server Team), and the Registry. In particular,
 - a. the provision of how to guides and staff support to ensure data is accurate in SAMIS (owner: Dept, SAMIS (BUCS & Registry))

- b. creation of Business Object Reports (owner: Dept, SAMIS (BUCS))
 - c. hosting of the service on BUCS live server as opposed to pilot which is hosted on an e-learning pilot server (owner: e-learning, BUCS)
 - d. creation of an number of FAQs hosted on the e-learning FAQ engine (owner: e-learning)
 - e. provision of resource from e-Learning Team to maintain (develop) the service, including the creation of Faculty “generic” coversheets (owner: e-learning)
 - f. promotion of service with Faculty Administrators (owner: e-learning)
2. Encourage Depts/Faculties to use the MetroLogic Elite Scanner from Barcode Warehouse.

Appendix 1: Start up costs for a Department / Faculty

Category	Description	Cost
Hardware	MetroLogic Elite Scanner	Approx £300.00
Software	Creation of a generic, personalised Faculty coversheet	No cost (undertaken by e-learning, needs SAMIS Team to hook into SAMIS)
	Scanning Software	No cost (supported by e-learning Team, needs SAMIS Team to hook into SAMIS). Note, iPhone app will cost approximately £0.75 per device.
	Business Object Reports	No cost (provided by the SAMIS Team)
Training	Students - FAQs	No cost (supported by e-learning Team)
	Staff – Using the Scanner	No cost (supplied by the e-learning Team)
	Staff - FAQs	No cost (supplied by the e-learning Team)
Total		£300.00

Appendix 2: A proposed service model for a University wide implementation

Service Name:

- Recording the physical student submission of student assignments

Primary Support:

- e-Learning Team, LTEO
- web: <http://go.bath.ac.uk/elearning>
- service support blog: <http://blogs.bath.ac.uk/qrcode>
- email: e-learning@bath.ac.uk

Note, the e-learning team will coordinate with SAMIS Team in BUCS.

Service Description:

The creation and maintenance of student assignment coversheets based on information in SAMIS about the assignment. This coversheet is to be printed out by the student.

The creation and maintenance of scanning software to allow the QR Code on the coversheet to be scanned, and this information uploaded to the appropriate table in SAMIS to record the assignment has been submitted.

The creation and maintenance of a service for confirmation emails to students and data logging.

The creation and maintenance of the appropriate Business Objects Report(s) against SAMIS to monitor the assignment submission.

Service Users:

- All members of the University of Bath may use the service

Service Provision:

- included (owned by the e-Learning Team)

- Provision, maintenance and development of the coversheet generator software. This includes the creation of individual Faculty generic coversheets
- Provision, maintenance and development of the scanning software (MetroLogic Elite Scanner & QuickMark on the iPhone)
- Provision, maintenance and development of documentation, support material and FAQs for the recording and monitoring of student submissions service
- Staff support on the use of the hardware and software (assumes support on Metrologic Elite Scanner and QuickMark on the iPhone)

- excluded (owned by Departments)

- Purchase of recommended hardware
- Ensuring data in SAMIS is accurate
- Creation of Business Object Reports
- Provision of space and desktop computers

Conditions of Use:

- Users must abide by the University of Bath Computing Services Policies and Guidelines. These are listed at;
 - <http://www.bath.ac.uk/bucs/aboutbucs/policies-guidelines/index.html>

Remote Access (students - printing of coversheet):

- Available on and off campus via the SAMIS on the Web interface.

Access Rights (staff – scanning):

- The scanner and/or iPhone will need some configuration by the e-learning team to ensure it connects. Therefore, none configured hardware will not work.

User Registration:

- Authenticated against University of Bath accounts. For students to access coversheets and for staff to access Business Object Reports. For access to the scanning software (USB Scanner) this is via a unique key.

Service Owner (Project Leader):

- Andy Ramsden (a.ramsden@bath.ac.uk), Head of e-Learning

Business Owner:

- n/a

Technical Lead:

- James Barrett, Educational Software and Systems Developer (e-learning@bath.ac.uk)

Deputy Technical Lead:

- n/a

Escalation:

- Step 1: Project Leader (Andy Ramsden)
- Step 2: Head of e-Learning (Andy Ramsden)
- Step 3: Director of Learning and Teaching Enhancement Office (Gwen van der Velden)

Service hours:

	Monday to Friday	Saturday and Sunday
0.00 to 9.00	non-core	non-core
9.00 to 17.00	Core	core
17.00 to 24.00	non-core	non-core

Service standards:

	Core	Non-Core
Services available	As non-core, plus, support and development via email, phone, and face to face meetings	Coversheet generation software via a web browser, QR Code Service blog available via web browser, QR Code FAQs available via web browser
Hours & days	n/a	n/a
Key performance indicators	n/a	n/a
Availability	QR Code Coversheet Software – 98%	QR Code Coversheet Software – 98%
Response times – maximum to answer phone (a) acknowledge email (b) and respond to email	Phone calls answered within core hours subject to staff availability in the e-learning office. The aim is to reply to an email query within 2 working days of their arrival.	first contact on the next working day
Fix time		first contact on the next working day

Scheduled Maintenance Windows:

- There is no planned maintenance windows for this service. The service maintenance (planned and emergency) will be disseminated via the QR Code Service Blog (<http://blogs.bath.ac.uk/qrcode>)
- This service is dependent on the availability of the SAMIS service. If the SAMIS service is unavailable, this service will also be unavailable. If the SAMIS system is upgraded there might be consequences for the performance of this service. The e-learning Team will work to minimise any disruptions caused by SAMIS upgrades.

Communication of Service Outage:

- QR Code Service Blog (<http://blogs.bath.ac.uk/qrcode>)

Critical Incident Notifications:

- E-learning (initially) e-learning@bath.ac.uk

Data Retention and Restoration Service:

- Data is retained in the SAMIS system. There is also data logging for the email confirmations and submission to SAMIS.

Recovery Point Objectives:

- asap

Recovery Time Objective:

- asap – best endeavours. If the system is not available people are recommended use the previous method of collecting and recording the submission by hand.